Summary of Radiological Survey and Monitoring Conducted at 160 East Illinois Street, Chicago, Illinois

GeoSyntec Project No. C11E8164

Introduction

The subject site is located at 160 East Illinois Street, at the northwest corner of Illinois Street and St. Clair Street, in Chicago, Illinois. The site formerly was occupied by a six-story structure with one level of basement. That building has been demolished with the exception of the perimeter foundation walls for the basement.

The site is immediately adjacent to and across an alley from a former industrial building, formerly occupied by Lindsay Light and Chemical Company. The Lindsay Light Building, to the north, was used for the manufacture of gas light mantles. That process utilized thorium compounds in the manufacturing process. Thorium is a radioactive element. Several properties in the vicinity have been found to be radiologically impacted apparently as a result of Lindsay Light activities.

When the subject site building was initially beginning demolition, the USEPA requested the site be surveyed for radiological impacts. Additionally, the USEPA requested that the demolition operations be monitored for radiological impacts in any fugitive dust from the site. Following the removal of the building and demolition debris, geotechnical engineering borings were drilled through the floor slab. The cuttings from these borings were screened for elevated radioactivity until the cuttings were apparently from natural soils. The basement floor was surveyed for elevated radioactivity, and upon removal of column foundation slabs beneath the floor slab, the underlying soil was surveyed. This summary report presents the data collected in those surveys and monitoring, and our conclusions regarding evidence of impacts.

Building Survey Prior to Completion of Demolition

The floors of the building were cleared of debris and rubble and surveyed for elevated radioactivity. At the time of the building survey, a portion of the building, estimated at less than 20 percent had been demolished or was too badly damaged to be safe to survey. The remainder of the building was surveyed in grids approximately 15 feet by 15 feet. The entire grid was surveyed using a Ludlum Model 2221 Scaler Ratemeter with an unshielded 2 x 2 NaI detector. The grids were divided into quarters, and the highest reading in each quarter grid was recorded. Appendix A presents the results of the grid surveys.

In addition to the floors, the walls of the building were surveyed. The walls were surveyed from the floor to a height of approximately 6 feet above the floor. Readings

were recorded for each approximately 7.5 feet length of the wall, approximately equal to the size of the floor survey grid recordings. The wall survey readings are also presented in Appendix A.

The readings found no areas of elevated radioactivity indicative of levels in need of remediation. The highest readings were correlated to the brick walls around the exterior of the building. These results were verbally reported to USEPA.

USEPA visited the site following completion of the survey and conducted verification surveys of several areas of the building, including confirmation of the highest readings found in this and previous surveys. USEPA concurred with the findings and verbal conclusions presented based on these survey results.

Survey of Soil Cuttings

Following removal of the majority of the demolition debris, three geotechnical soil borings were drilled through the basement floor slab. The cuttings from the borings were surveyed for elevated radioactivity for the upper approximately 8 feet, until it was obvious from the cuttings that the boring was advanced into natural sand. The results of these surveys of the soil cuttings are included in Appendix B. These data show no results indicating radiologically impacted soils in these borings.

Basement Floor and Sub-Slab Soil Survey Readings

Following the completion of the demolition and removal of the demolition debris, the floor slab of the basement was surveyed for elevated radioactivity. In the course of the demolition and during the removal of the demolition debris, the basement floor slab was significantly broken-up. The survey of the slab, prior to removal, found no areas of elevated radioactivity that could not be attributed to naturally occurring radioactivity in brick debris present in the basement or adjacent brick walls. Data from this floor survey are presented in Appendix C.

Following the survey of the basement floor slab, as the slab was being removed, it was discovered that the majority of the basement was underlain by large, approximately 9-foot by 9-foot, 16-inch thick concrete slabs that formed the footings for the building columns. In consultation with USEPA, it was agreed that upon removal of these slabs, the remaining pits would be surveyed to document the radiological character of the soil beneath the floor slab. The walls and floor of each pit from which a slab was removed was surveyed. The survey of the soil beneath the floor slab and the column footings found no areas of elevated radioactivity indicative of an exceedance of the cleanup criteria established by USEPA. The data from this sub-slab survey is included in Appendix C.

USEPA visited the site during the completion of the floor survey and while the column foundation slabs were being removed. USEPA conducted a verification survey of portions of the basement floor and participated in the initial surveys of the pits resulting

from the removal of the column foundation slabs. The verification surveys conducted by USEPA agreed with the results reported herein.

Site Perimeter Air Quality Monitoring

During the building demolition, USEPA requested the site perimeter be monitored for potential radiological impacts to dust from the site. Four high volume samplers were stationed at the site margins. In that the exterior walls remained in place for the majority of the demolition along the north and south margins of the site, the Intercontinental Hotel occupies the western site margin, and the debris loading was conducted at the east end of the site, the air monitoring was concentrated on the open eastern side of the site.

Sampling pumps were positioned at the southeast corner of the site on both the upper and lower levels of Illinois Street. One sampling pump was positioned near the middle of the east side on the site perimeter fence on the east side of St. Clair Street. One sampling pump was positioned near the northeast corner of the site at the alley.

The samples were generally collected each day during the entire time demolition and debris loading operations were conducted. Per agreement with USEPA, sampling was not required during times of rain, as dust suppression was not generally a problem, and sampling during rain events can be detrimental to the sampling equipment.

The samples were read for elevated radioactivity one day after sampling and four days after sampling. The four-day results were used to compare to regulatory limits as these allow for the decay of short-lived decay progeny. No readings above the regulatory limits were detected in the air monitoring results from the site. These data are presented in Appendix D.

Summary

The data collected to date show no evidence of elevated radioactivity in the building prior to demolition. Surveys of cuttings from soil borings beneath the floor slab including several feet of penetration into natural sand showed no elevated readings of radiologically impacted material. Radiation surveys of the basement floor slab and the soil beneath the slab find no evidence of elevated radioactivity within the building footprint. Air sampling results found no evidence of radiologically impacted dust from the demolition activities.

The verification surveys conducted by USEPA of the building, the basement slab, and the soil beneath the floor slab and column foundation slabs found no evidence of radiologically impacted soil, based on the results communicated during their field visits.